



MANAGEMENT OF PATIENTS WITH GASTRIC AND DUODENAL ULCERATIVE BLEEDING

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Running Title: HAEMOSTASIS FOR GASTRIC AND STOMACH ULCER BLEEDING

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ABSTRACT

Object: To evaluate the effectiveness of endoscopic haemostasis for peptic ulcer bleeding.

Materials and methods: This study included 60 patients with bleeding from stomach and duodenal ulcers who underwent inpatient treatment at the emergency surgery department of the second clinic of the Tashkent Medical Academy between 2018 and 2020. There were 27 men (60.0%) and 18 women (40.0%), for a ratio of 1.5:1. The age of the patients ranged from 18 to 73 years. Only patients with bleeding evaluated as Forrest IA (FIA), FIB, or FIIA were included in the study. Bleeding was estimated as FIA in 10 (22.2%) patients, FIB in 8 (17.8%), and FIIA in 27 (60.0%). The haemoglobin level ranged from 28 to 100 g/l. In some cases, methods other than clipping were used for endohaemostasis, but because of their ineffectiveness, they were not included in the work. In all cases, to achieve haemostasis, Hemoclips varying in size from 5 to 12 mm (Olympus) were installed.

Results: The analysis revealed that the efficacy of endoscopic clipping can reach up to 93.2% and that it is the method of choice for profuse gastroduodenal peptic ulcer bleeding, especially in patients with a high risk for anaesthesia and surgery. Thus, this method could be an alternative to open surgical interventions.

KEY WORDS: endoscopic haemostasis; retrograde endoscopic haemostasis; injection; haemoclipping; argon plasma coagulation; profuse gastroduodenal peptic ulcer bleeding.



TOPIC

The diagnosis and treatment of patients with acute erosive-ulcerative gastroduodenal bleeding remain great challenges in emergent surgery. The aetiological factors of acute erosion and ulcers complicated by bleeding are injuries, burns and surgical interventions [1, 2, 4]. Cases of erosion and ulcers of the upper gastrointestinal tract after minor operations in patients who previously did not suffer from gastrointestinal tract diseases have been described. The mortality rate in this category of patients, especially in cases of severe concomitant pathologies, can reach up to 60%; with bleeding recurrence, this rate is more than 80% [1, 2, 11].

In most published works, acute bleeding ulcers are often treated as peptic ulcers using the same therapeutic strategies. The clinical course of acute ulcers differs from that of peptic ulcers. Of all the known diagnostic methods, endoscopic examination not only allows accurate diagnosis but also enables haemostasis to be achieved, the effectiveness of which exceeds 90% [1, 3, 14, 16].

The main reasons for the unsatisfactory results of endoscopic haemostasis are the presence of intense arterial bleeding from ulcers in atypical locations, which leads to difficulties in visualizing the source of bleeding, as well as the presence of bleeding disorders, among others.

MATERIAL AND METHODS

We analysed 60 clinical cases of acute erosive-ulcerative bleeding treated at the emergency surgery department of the multi-disciplinary clinic of the Tashkent Medical Academy between 2018 and 2020. The age of patients ranged from 18 to 83 years. Over 50.0% of these patients were over 55 years of age. In 48 (80.0%) patients, the cause of bleeding was acute ulcers and erosion of the stomach (antrum and prepyloric region, 31 cases; body of the stomach, 6; cardial section, 3; bottom of the stomach, 2; back wall of the body and large curvature of the stomach, 6 cases), and 12 (20.0%) patients had an acute duodenal ulcer. It should be noted that stomach ulcers at the last listed location are not common, but there are technical difficulties in visualizing these zones of the stomach to localize blood clots during bleeding from the upper gastrointestinal tract. The intensity of bleeding in all patients was distributed as follows: Forrest IA (FIA), 9 (15.0%); FIB, 21 (35.0%); and FIIA, 30 (50.0%).

An analysis of the main causes of acute ulcers revealed that the pathology developed due to uncontrolled non-steroidal and steroidal anti-inflammatory drug administration in 32 (53.5%) patients; volume surgeries, car accidents and burns in 20 (33.5%) patients, and the complicated course of an underlying disease or its decompensation over a long period of hospitalization leading to gastrointestinal haemorrhage (GH) in 8 (13.0%) patients. Moreover, in most cases, preventive antiulcer therapy was not carried out.

Most often, acute ulcers were observed in the hospital, appearing against the background of the decompensation of acute or chronic disease, often associated with multiple organ failure syndrome. Most ulcers in this group of patients occurred with a combination of diseases affecting the cardiovascular and respiratory systems and diabetes mellitus. When analysing the nature of the concomitant pathology, a significant dependence of the appearance of GH from acute ulcers on the number of systemic organ lesions was found. In 50 (84.5%) patients with a concomitant pathology, a combination of two or more diseases was observed, the most frequent of which were coronary heart disease, chronic non-specific lung disease and cerebrovascular disease. In addition, in this group, there were 7 patients with decompensated cirrhosis and liver failure and 3 patients with chronic renal failure.

Thus, the risk factors for the development of complications from acute ulcers in this group include the following: 1. advanced age; 2. limited nutrition, leading to an imbalance in the acid-base balance in the stomach; 3. uncontrolled intake of steroid and non-steroidal anti-inflammatory drugs; 4. second- to third-degree organ dysfunction on severity assessment using the APACHE system; and 5. prolonged bed rest.

Therefore, when these adverse factors are detected in patients, measures to prevent erosive and ulcerative lesions of the gastrointestinal tract should be applied. Acute ulcers associated with taking medications are observed in 45–68% of elderly patients, and this aetiology recently accounted for one-third of gastroduodenal bleeding cases. According to our data, this is the most frequent cause of complications of acute ulcers in inpatients. For the most part,



these ulcers appear after the use of cyclooxygenase inhibitors. Among our patients, 30 (50.0%) were over 55 years old and took more than 3 drugs per day, usually disaggregants (analogues of acetylsalicylic acid), anticoagulants (warfarin), NSAIDs (diclofenac, Voltaren, ibuprofen) and steroid preparations. Of these, 11 (18.1%) patients had systemic disease and diabetes mellitus and regularly received steroids (prednisone, beclomethasone) and hypoglycaemic drugs in combination with anti-inflammatory drugs and antiplatelet agents.

Acute ulcers in the early postoperative period develop in 2.5–24% of patients [1, 5, 8, 10, 12, 13]. Under our supervision, there were 20 (33.5%) patients with acute ulcers in the postoperative period. All acute ulcers in this patient group manifested from 4 to 9 days after surgery and were observed in the complicated course of disease during the postoperative period along with progressive organ dysfunction.

According to the conclusion of the Russian Association of Surgical Infection Specialists, 2 variants of acute ulcers in the early postoperative period are distinguished: type I - superficial diffuse erosion with a low risk of bleeding; type II - deep localized ulcers with a high risk of haemorrhagic complications, the frequency of which in ICU patients reaches 14%, with an associated mortality rate of 64% [2, 3]. There are various difficulties in diagnosing acute ulcers and erosion of the stomach, including the lack of clinically significant symptoms of bleeding in 60% of patients, the hidden nature of the disease, and the ability to achieve the diagnosis only with the appearance of haemodynamic disorders.

The standard in the diagnosis of erosive and ulcerative lesions of the upper gastrointestinal tract is endoscopy. Usually, for small acute ulcers 5–10 mm in diameter, the shape of the ulcer is round, the edges are smooth, the bottom is not deep, and a haemorrhagic plaque is often present. Multiplicity is characteristic of acute ulcers, and a combination of localization in the stomach and the duodenum is often observed.

During an endoscopic examination, in addition to examining the gastroduodenal zone, a primary assessment of the intensity and nature of the bleeding is of particular importance. To achieve haemostasis, we used thermal (monopolar, bipolar electrocoagulation, hydrocoagulation, argon plasma coagulation), injection and mechanical (vessel clipping) methods for haemostasis. The choice of the method for haemostasis depended on the intensity of ulcerative bleeding. In 21 cases (35.0%), the edges of the ulcer were chipped, electrocoagulation was performed in 7 (11.7%) cases, argon plasma coagulation was performed in 12 (20.0%) cases, and clipping was performed in 9 (15.0%) cases. In 11 (18.3%) cases, combined methods of endoscopic haemostasis were used (Table 1).

Table 1.

Applied methods for endoscopic haemostasis

Endoscopic haemostatic method	Haemostatic agent	Number
Injection method	Ethanol (33%), ethoxysclerol (1%)	21 (35.0%)
Electrocoagulation	Bipolar electric current	7 (11.7%)
Argon plasma coagulation (APC)	Argon	12 (20.0%)
Clipping	Olympus Haemoclips, size 7-9 mm	9 (15.0%)
Combined methods	Injection + electrocoagulation, Injection + clipping	11 (18.3%)

It should be noted that in 54 (90.0%) cases, endoscopic haemostasis was performed for the first time with the patient positioned on their right side, with bleeding ulcers of the posterior wall of the upper third of the body and large curvature of the stomach.

Clinical example No. 1. Patient T., 59 years old (IC No. 8951). The patient presented (11/10/2018) to our clinic with signs of profuse bleeding from the gastrointestinal tract. Anamnesis revealed that the patient suffered from IHD, PICS, type 2 diabetes mellitus, and liver cirrhosis. The patient regularly took antiplatelet agents and anti-inflammatory drugs.

EGDS revealed no features in the oesophagus, blood clots of approximately 300 ml in the lumen of the stomach, and no pathology in the duodenum or the antrum or body of the stomach. Further retrograde examination



revealed an acute ulcer in the upper third of the stomach body on the side of the greater curvature; however, it was not possible to visualize the size of the ulcer or the nature of the bleeding due to the presence of blood clots over this area. To visualize the latter, the patient's position on the right side was changed. After that, all blood clots moved to the lesser curvature. It was further revealed that there was an acute ulcer in the area of the greater curvature of the stomach, 10x12 mm in size, with signs of active bleeding. Retrograde endoscopic chipping of the edges of the ulcer was performed with a 33% ethanol solution, stopping the bleeding. The patient reached a satisfactory condition and was discharged on the 4th day.

After performing endoscopic haemostasis for acute ulcers with active bleeding, it is necessary to identify patients with a high and low risk of recurrence according to the Forrest classification. Regarding patients with a high risk of bleeding recurrence from acute ulcers on endoscopy, we included patients with active bleeding from one or more acute ulcers at the time of primary endoscopy (FIA, FIB) and without bleeding (FIIA).

According to the results of primary gastroscopy in patients at a high risk of recurrent bleeding, a dynamic study is necessary to implement endoscopic prophylaxis for repeated haemorrhage. The term for performing repeated EGDFS depended on the reliability of the method performed for primary haemostasis, with an average of 0.5–3 days from the moment of primary endoscopy. During dynamic EGDFS, the quality of haemostasis and the risk of recurrent bleeding were re-evaluated, and prevention was carried out in the case of ongoing risk. After successful endoscopic haemostasis, further methods of prevention and treatment included intensive antiulcer therapy, normalization of the motor evacuation function of the stomach, and symptomatic treatment.



Picture 1. Retrograde haemostasis.

RESULTS AND DISCUSSION

After endoscopic treatment, final haemostasis was achieved in 54 (90.0%) cases. Recurrent bleeding was noted in 5 (10.0%) cases. After repeated endoscopic intervention in 2 cases, the bleeding was finally stopped. Due to inefficacy of the endoscopic method for haemostasis in an extremely serious condition, 2 patients were taken for surgery amid ongoing bleeding. In the postoperative period, 1 patient died due to multiple organ failure. Another patient died in the early postoperative period due to suture failure, peritonitis and DIC.

According to V.A. Kubyshkin [4], in most cases of bleeding from acute ulcers, the use of endoscopic methods for haemostasis in combination with modern antisecretory therapy can prevent recurrence and achieve adequate haemostasis without surgery. In general, the effectiveness of endoscopic haemostasis can reach 90–95%. In our observations, recurrent bleeding was not observed in the low-risk group. In 7 (4.2%) patients at high risk, recurrent bleeding was noted. After repeated endoscopic intervention in 3 cases, final haemostasis was achieved.



According to P.D. Fomin [8], using the injection method with a 33% ethanol solution, primary haemostasis was achieved in 90% of patients, final haemostasis was achieved in 85% of patients, and the rate of bleeding recurrence was 15%. However, often, this method can lead to tissue destruction and massive necrosis of the organ wall with its subsequent perforation, which is a disadvantage of this method.

In his research, Cook D.J. [11] claims that the use of coagulation methods for haemostasis allows primary haemostasis to be achieved in up to 91-94.0% of cases, allows final haemostasis to be achieved in 85.0-88.0% of patients, reduces the rate of emergent surgery to 10.5%, and reduces the mortality rate to 3.0-4.5%, with recurrent haemorrhage occurring in 8.0-9.5% of patients. In 21 cases, we used coagulation methods (diathermocoagulation, 7; argon plasma coagulation, 12; combined method, 2). Recurrent haemorrhage was noted in 2 (9.5%) cases, which required surgical treatment.

In 1980, for the first time in Japan, Dr Hachisu, together with the company Olympus, created a clipper and clips for endoscopic haemostasis. In his opinion, with the help of endoscopic clipping for ulcerative bleeding, haemostasis can be achieved in 85-100% of cases, reducing the frequency of recurrence from 20% to 2% [13].

K.F. Binmoeller [10], in Germany, applied the endoclip technique in 88 patients with active ulcerative bleeding from the upper gastrointestinal tract and obtained excellent results. Recurrence was observed in 5 (5.6%) patients, only one of whom required surgery. There were no cases of mortality.

Many authors claim [8, 10, 13] that using rotary clips in patients with active ulcerative bleeding can achieve final haemostasis in 95% of cases, with a decrease in the recurrence rate to 5.0%. Moreover, the inefficiency of the method may be associated with technical difficulties in visualization and identification of the bleeding source. We used endoscopic clipping in 12 patients; in 3 of these patients, endoclippping was combined with other methods. Bleeding recurrence was noted in 2 (16.6%) patients; in one of them, it was possible to stop the bleeding endoscopically; in the other, surgical treatment was required.

A randomized study published in the journal *Gastrointestinal endoscopy* reported that the rate of primary final haemostasis achieved by endoclippping increased from 92 to 96% and that the rate of bleeding recurrence decreased by almost half (from 15 to 8.5%). However, a change in the method of endoscopic haemostasis did not affect the rate of mortality or open surgical intervention [13].

Such a considerable difference in indicators of persistent haemostasis or recurrent bleeding is mainly due to the bleeding originating from a “difficult” location and the occurrence of profuse arterial bleeding. Despite the advantage of modern endoscopic methods for haemostasis, further research is needed to develop more effective methods.

CONCLUSIONS

1. Endoscopic methods for haemostasis are effective for controlling bleeding (especially FIA, FIB, and FIIA bleeding) from acute ulcers and erosive lesions of the upper gastrointestinal tract, with a rate of final haemostasis of up to 93.3%.
2. The use of combined methods and retrograde haemostasis with the patient on their right side made it possible to stop bleeding in 90% of cases.
3. In the case of endoscopic method failure, it is necessary to resort to open surgery.

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